

Appl. No. 10/531,191
Amdt. dated March 6, 2008
Response to Office Action of September 7, 2007

Remarks

Claims 1-7 are presently pending. The claims stand rejected under 35 U.S.C. §112, first paragraph, for alleged lack of enablement. The Examiner stated that the specification enables certain specific compounds (i.e., phosphoric acid, phosphorous pentoxide, ammonium dihydrogenphosphate and diammonium hydrogenphosphate), but does not more broadly enable "a compound which releases phosphate ions in a solution," as currently recited in the claims.

The rejection is respectfully traversed. The applicants respectfully submit that it is within the basic knowledge of those skilled in the art that there are standard compounds (which include not only the compounds explicitly listed in the specification) "which release[] phosphate ions in a solution."

For example, in a 1964 article readily available on the internet (see <http://soil.scijournals.org/cgi/content/abstract/28/2/251> – a hard copy of which is submitted herewith), a number of such "standard" phosphate-ion-releasing compounds were investigated for their effect on seed germination in soils. Among the compounds investigated were phosphoric acid [H_3PO_4], ammonium dihydrogenphosphate [$(\text{NH}_4)\text{H}_2\text{PO}_4$], and diammonium hydrogenphosphate [$(\text{NH}_4)_2\text{HPO}_4$] (all of which are specifically disclosed in the subject specification), as well as ammonium phosphate [$(\text{NH}_4)_3\text{PO}_4$] (which is not specifically disclosed in the subject specification). It is clear from this 1964 article that, for purposes of phosphate ion-release in solution, ammonium phosphate would be considered a standard substitute for any of

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the several compounds actually listed in the subject specification. Since such information was, and is, readily known to those of skill in the art, it would be unfair to narrow the scope of the claims so as to exclude ammonium phosphate, especially since the application, as originally filed, disclosed and claimed the use of any "compound which releases phosphate ions in a solution." The specification provides specific examples of four such compounds, with the knowledge that those of skill in the art would have ready recourse to a selection of additional compounds that function in the same way.

As further evidence of the widespread knowledge of a general class of compounds "which release[] phosphate ions in a solution," the Examiner's attention is directed to US Patent No. 5,997,602 (issued in December 1999), which relates to aqueous fertilizer suspensions that release phosphate ions. In the "Background of the Invention" section, the '602 patent discloses that there are standard "water-soluble phosphorus sources such as for instance monoammonium phosphate, diammonium phosphate or potassium phosphate." Once again, although the subject specification does not specifically list "potassium phosphate" as one of the compounds "which release[] phosphate ions in a solution," it would be unfair to exclude the same from the scope of the claims, for the reasons set forth above.

There are a limited number of phosphate-containing compounds available to industrial chemists. As evidenced by the prior art cited above, such compounds generally have been well characterized with respect to whether or not these release phosphate ions into solution. Even in

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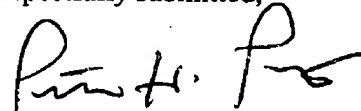
the rare case where such a compound may not previously have been characterized in this respect, it would take only the introduction of such compound into a solution, followed by a simple test, to determine whether or not it releases phosphate ions. This would not require undue experimentation.

Therefore, it is respectfully asserted that the phrase "compound which releases phosphate ions in a solution" refers to a limited class of well-known compounds whose properties already are known in the art, or at least can readily be determined.

Conclusion

It is believed that all of the claims are in condition for allowance, which action is respectfully requested.

Respectfully submitted,



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The Effect of Ammonium Phosphate and Other Chemicals on the Germination of Cotton and Wheat Seeds¹

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ABSTRACT

Field and greenhouse studies with cotton and wheat showed that fertilizers containing ammonium phosphates were especially detrimental to germination and could result in very poor stands. In order to study the cause of this harmful effect, seeds were soaked in salt solutions (including ammonium phosphates) and acids for various time intervals. The seed surfaces were then washed free of the solutions and allowed to germinate. The $(\text{NH}_4)_2\text{HPO}_4$ solutions reduced germination more than any other salt solution including $\text{NH}_4\text{H}_2\text{PO}_4$. In studies with cotton seed, a solution of $(\text{NH}_4)_2\text{SO}_4$ adjusted with NH_4OH to pH 8.2 did not reduce germination as much as did $(\text{NH}_4)_2\text{HPO}_4$. Germination was lowered more by H_2SO_4 than by H_3PO_4 at the same pH. Soaking the seed in salt solutions such as CaSO_4 before soaking in $(\text{NH}_4)_2\text{HPO}_4$ did not improve germination. When the seeds were soaked in MgSO_4 or MgCl_2 after being soaked in $(\text{NH}_4)_2\text{HPO}_4$, there was an improvement in germination as compared with $(\text{NH}_4)_2\text{HPO}_4$ alone. Soaking in MgSO_4 and MgCl_2 did not increase the germination of seed that had been soaked in H_3PO_4 . It appears that the detrimental effect of ammonium phosphate is not due to the ammonium or phosphate ion *per se*.

NOTES

¹ Contribution from the Department of Agronomy and Soils, Agr. Exp. Sta., Auburn University, Auburn, Ala., in cooperation with the Div. of Agr. Relations, TVA. Presented before Div. IV, Soil Sci. Soc. Am., August 21, 1962, at Ithaca, N. Y.

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